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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,662	07/13/2001	Yasuhito Inagaki	09792909-5081	5976
26263	7590	12/12/2006	EXAMINER	
SONNENSCHN NATH & ROSENTHAL LLP			KORNAKOV, MICHAIL	
P.O. BOX 061080			ART UNIT	PAPER NUMBER
WACKER DRIVE STATION, SEARS TOWER			1746	
CHICAGO, IL 60606-1080				

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/905,662

Applicant(s)

INAGAKI ET AL.

Examiner

Michael Kornakov

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6,8-16 and 19-34 is/are pending in the application.
- 4a) Of the above claim(s) 14-16,20-22 and 24-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6,8-13,19 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 6,8-16 and 19-34 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/02/2006 has been entered.
2. Claims 6, 8-16, 19-34 currently pending. Claims 23-34 are new. Claims 14-16, 20-22 were previously withdrawn from consideration.
3. Newly submitted independent claims 24, 32 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: if presented previously along with claim 6, they would have been restricted based on combination/subcombination relationship, wherein (1) either the combination (claim 6) as claimed does not require the particulars of the subcombination (claim 24) as claimed for patentability or the combination (claim 32) as claimed does not require the particulars of the subcombination (claim 6) as claimed for patentability or and (2) that the respective subcombinations have utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination of claim 6 as claimed does not require the particulars of the subcombination of claim 24 as claimed because it does not require controller connected to the pump and configured to control the pump to pump the fluid

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from the source. The subcombination has separate utility such as independent etching or surface modification apparatus. The combination of claim 32 as claimed does not require the particulars of the subcombination of claim 6 as claimed because it does not require the presence of specific measuring means for measuring characteristics of hydrofluoric acid concentration and controller to be connected to the pump of fluid feeding system. The subcombination apparatus can be used for etching or surface modification apparatus.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 24-34 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

4. Claims 6, 8-13, 19, 23 are examined on the merits.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 6, 8-13, 19, 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recited in claim 6 "a substrate cleaning bath to contain therein a substrate cleaning liquid..." constitutes an indefinite subject matter, because it is not clear if the recited "cleaning bath **to contain** therein a substrate

cleaning liquid" is an intended use of the apparatus or a part of the apparatus. If Applicants consider the cleaning liquid to be a part of the apparatus, Applicants are advised to replace the recitation "cleaning bath to contain" for ---cleaning bath containing----- in order for the liquid in the bath to be considered as part of the apparatus, but not the limitation indicating the intended use of a bath. Appropriate clarification and/or correction is required. Claims 8-13, 19, 23 are rejected because of their dependency and failure to remove the ambiguity of parent claim.

Claim Objections

7. Applicants' attention is drawn to claims 20-22, which depend on cancelled claim 18 and therefore can not be examined. Applicants' attention is also drawn to new claim 23, which is apparently redundant to claim 12, since claim 23 also depends on claim 6 and recites the structural elements identical to claim 12. Appropriate corrections are required.

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 6, 8-10, 12, 13, 19, 23 are rejected under 35 U.S.C. 102(e) as being unpatentable over Hoffman et al (U.S. 6,350,425).

Hoffman teaches a substrate processing system comprising a mixing tank 306 to contain aqueous solution of ammonium fluoride or buffered HF, the mixing tank can be the point of use, in which ***the substrates are processed*** (col.11, lines 65-67). This clearly reads on the substrate cleaning bath of claim 6. Further disclosed are water

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feeding means 308 for feeding DI water to the mixing tank; a valve 316 for regulating the amount of water introduced into the tank (col. 9, lines 64-67); measuring means 328 for measuring hydrofluoric acid concentration; **control means** for automatically operate the apparatus valves, including water supply valve 316, to regulate the amount of water introduced into the mixing tank. The concentration measuring means may include conductivity, density, index of refraction or infrared spectroscopy measuring equipment, volumetric or gravimetric scale (col. 9, lines 10-67; col.10, lines 1-6, 18-27, 34-37, 52-61; col.11, lines 8-11, 39-44, 65-67). The circulation system of Hoffman includes a pump and the said system is configured to circulate the cleaning liquid from the mixing tank, through the measuring means and back to the mixing tank (Fig. 3). It is noted that all the above structural limitations are operable according to Hoffman during the substrate cleaning procedure (col.11, lines 65-67).

While indicating that the mixing tank 306 can be the point of use, in which **the substrates are processed** (col.11, lines 65-67), Hoffman remains silent about a substrate carrier for holding the substrate in the processing solution. However, the Examiner takes an official notice that variety of such substrate carriers are known and utilized in the art and those skilled in the art will readily be able to integrate appropriate carrier into the apparatus of Hoffman. As to the recitation of claim 6, stating that "control means configured to process a signal from said measuring means...so that the rate at which the substrate is cleaned remains substantially constant", it is noted here that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art

apparatus" if the prior art apparatus teaches all the structural limitations of the claim, consult Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffman et al (U.S. 6,350,425) in view of Pham et al (U.S. 6,156,944) or Swain et al (U.S. 5,895,639), each one individually.

While teaching variety of measuring means for measuring concentration of hydrofluoric acid, Hoffman does not specifically indicate measuring means consisting of liquid (ion) chromatography. However measuring concentration of HF by liquid (ion) chromatography and, therefore, means for applying liquid (ion) chromatography are also known in the art. Thus, Pham and Swain, each one individually, utilize liquid ion chromatography to determine the concentration of HF within the solution. The simplicity of implementation of liquid ion chromatography is an advantage of this technique. Therefore, one skilled in the art may choose liquid ion chromatography among the other known concentration measuring techniques and in lieu of measuring techniques proposed by Hoffman in order to simplify measuring the concentration of HF and provide relatively inexpensive measuring means in the teaching of Hoffman.

Response to Arguments

11. Applicants' arguments filed 09/08/2006 have been fully considered but they are not persuasive. Applicants argue that "Hoffman does not disclose control means configured to process a signal from the sensor 328 during cleaning of the wafer in the mixing tank 306 to control the feeding of water, or any replenishing fluid, to the mixing

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tank during cleaning of the wafer in the tank so that the rate at which the substrate is cleaned remains substantially constant." This is not found persuasive since Hoffman teaches the apparatus with the structural elements almost identical to those instantly claimed and it is well settled that while features of an apparatus may be recited either structurally or functionally, claims directed to >an< apparatus must be distinguished from the prior art in **terms of structure rather than function**, In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael Kornakov
Primary Examiner
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12/10/06